REMARKS

Claims 1 and 3-17 are pending. Claims 1, 3, 6-11, and 13-17 stand rejected under 35 U.S.C. § 103 as being unpatentable over U.S. Patent No. 3,812,438 in view of U.S. Patent No. 6,509,821. Claims 4, 5 and 12 have been allowed. The Applicants sincerely thank the Examiner for allowing claims 4, 5, and 12.

Rejections under 35 U.S.C. § 103

Claims 1, 3, 6-11 and 13-17 stand rejected as being unpatentable over U.S. Patent No. 3,812,438 by Hopfer (hereinafter "Hopfer") in view of U.S. Patent No. 6,509,821 by Oldfield (hereinafter "Oldfield"). The Examiner states that Hopfer discloses the instant claimed invention except for the specific material of the coil form, and that it would have been obvious to use poly-iron from the coil form of Hopfer, as suggested by Oldfield, for the purpose of controlling the magnetic flux. The Applicants respectfully traverse.

To establish a prima facie case of obviousness, there must be a reasonable expectation of success, and the prior art references must teach or suggest all the claim limitations. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, and not based on applicant's disclosure. Each reference must be taken as a whole, as must the claim.

Taken as wholes, the combined disclosures of Hopfer and Oldfield do not disclose a polyiron coil form and would not lead one to the inductor of claim 1. Hopfer discloses that the specific cone material used therein is a dielectric material, such as REXOLITE. Hopfer further discloses that the grooves in the dielectric cone set the wire back from the conical ground plane opening, and that, "due to the dielectric constant of the conical support 58 and the deep imbedding of the wire within that, [*sic*] support so that most of the electric field is located within the dielectric" (Col. 9, lines 55-65, emphasis added). Hopfer states that "the non-periodic looping such as that on the cone 58 shown in FIG. 2 (or by an Archimedes spiral in a plane) avoids the resonances found in periodic structures" (Col. 6, lines 53-56).

In Col. 10, lines 11-18, Hopfer disparages closely wound high-frequency coils made from insulated wire because they "act as a metallic sheath due to the interwinding capacitance at high frequencies, and their operation is unpredictable when used to couple into a microwave line handling frequencies above 100 megacycles." Thus, Hopfer teaches

away from the closely wound inductor coil of Oldfield. However, a closely wound inductor coil is essential to the technique of Oldfield because Oldfield fills the closely wound coil form with liquid polyiron, which is then cured (see Col. 4, lines 56-63). Oldfield states that "use of the dielectric in a liquid form during manufacturing allows the dielectric to flow into the smallest winding diameters of the coil where it is the most effective at reducing high frequency resonant loss glitches. The dielectric material after it cures or hardens will then tend to hold the coil together making the coil less susceptible to handling damage" (Col. 4, lines 39-45; see also, Col. 4, lines 56-59)." Thus, Oldfield teaches away from the non-periodic looped ("Archimedes") spiral coil of Hopfer, which is incompatible with the liquid polyiron technique suggested by Oldfield. Oldfield teaches away from substituting the spirally-grooved REXOLITE core of Hopfer with a similar core of polyiron because then the polyiron would not flow into the smallest winding diameters. Hopfer also teaches away from such a substitution because Hopfer appears to rely on the combination of both the high-resistivity thin-wire spiral and the dielectric cone to form a particular type of single-wire transmission line (see Col. 11, lines 11-20) in which "[t]h energy of the surface wave is carried in the electric field space surrounding the wire" Col. 12, lines 64-66). Hopfer teaches the desirability of the using the grooved dielectric core "so that most of the electric field is located within the dielectric" (Col. 9, lines 62-63), and thus teaches away from substituting polyiron for the low-dielectric constant, low loss REXOLITE core.

A prima facie case of obviousness has not been established because, taken as wholes, the teachings of Oldfield and Hopfer do not teach or suggest claim 1. Claim 1 and all claims that depend from claim 1 are patentable.

Claim 3, which depends from claim 1, recites that "the integrated contact comprises a plated tip portion of the polyiron coil form." As explained in the written description (see ¶ [0032]- [0033]), particular problems arise when plating polyiron. While Hopfer suggests that his "dielectric cone 58 may be formed with a conical tip having a metallic contact coating," Hopfer does not suggest, and is not an enabling reference for, a polyiron coil form having a plated tip portion. Therefore, claim 3 is further patentable and claims 11 and 16 are patentable for similar reasons.

Claim 6, which depends from claim 3, recites that the inductor further comprises "a groove in the plated portion of the polyiron coil form. The Applicants teach that such as

groove "facilitates proper placement of the first turn of wire, the end of which is soldered to the plated groove, and supports the first turn of wire to keep the wire coil from slipping off coil form when the wire is wound." (¶ [0030]). Hopfer does not disclose or suggest a groove in a plated portion of a polyiron coil form. The metal tip 56 of Hopfer is not grooved; however, the dielectric cone includes deep V-grooves so that the uninsulated wire 62 seats therein (Col. 9, lines 56-58). The grooves in the dielectric cone avoid the need to provide a groove in the tip and are not a mere design choice because the grooves are essential for forming the spiral coil of wire around the dielectric form. Thus, Hopfer teaches away from providing a groove in a plated portion of a polyiron coil form. Claim 6 is further patentable, and claims 13 and 16 are also patentable for at least similar reasons.

Claim 10, which depends from claim 1, recites that the integrated contact has a hemispherical radius not greater than 250 microns. The Examiner asserts that "Hopfer inherently discloses the integrated contact has a radius not greater than 250 microns. The specific hemispherical radius of the integrated contact would have been an obvious design consideration for the purpose of increasing contact area." The Applicants respectfully traverse.

Hopfer discloses a "contact radius" of about 0.01 inch or less (Col. 3, line 49); however, the tip is circular (Col. 3, line 38; Fig. 2, ref. num. 54). The radius disclosed in Hopfer is circular, not hemispherical. The tip of Hopfer creates a planar circular contact. The circular tip of Hopfer teaches away from a hemispherical tip. The hemispherical contact recited in claim 10 produces a rounded tip that contacts an underlying conductor with reduced contact area (compared to a circular planar contact area having a similar circular radius), which is opposite of the motivation urged by the Examiner.

Additionally, the circular tip of Hopfer does not provide the advantages obtained by the inductor of claim 10. The conical metal tip 56 of Hopfer flares outwardly from the circular tip 54. The conical metal portion above the circular tip 54 overhangs the circular tip, and can undesirably couple to the conductor (*e.g.* stripline 50) contacting the circular tip. An integrated contact with a hemispherical radius provides a conductive tip surface without substantially increasing the contact area of the tip to the microcircuit (paragraph [0030]). The combination of a hemispherical contact that is not greater than 250 microns provides a contact to an underlying conductive area, such as a center conductor of a

microstrip transmission line fabricated on a silica substrate (see ¶ **[0035]**). Therefore, claim 10 is further patentable.

CONCLUSION

The Applicants submit that all claims are now in condition for allowance. Favorable reconsideration and timely issuance of a Notice of Allowance are respectfully requested. Should the Examiner consider necessary or desirable any formal changes anywhere in the specification, claims, and/or drawings, then it is respectfully asked that such changes be made by an examiner's amendment, if the Examiner feels this would facilitate passage of the case to issuance. If the Examiner believes a telephone conference would expedite prosecution of this application, the Examiner is cordially invited to telephone the undersigned at (707) 591-0789.

Respectfully Submitted,

Scott Hewett

Scott Hewett
Patent Attorney
400 West Third Street, No. 223
Santa Rosa, CA 95401
Tel.: (707) 591-0789
Fax.: (707) 591-0392